

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8271-2-22 (1985): Quartz Crystal Units Used for Frequency Control and Selection, Part 2: Series AA for Oscillators, Section 22: Quartz Crystal Unit Type AA-22 [LITD 5: Semiconductor and Other Electronic Components and Devices]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE





Indian Standard

**SPECIFICATION FOR
QUARTZ CRYSTAL UNITS USED FOR
FREQUENCY CONTROL AND SELECTION
PART 2 SERIES AA FOR OSCILLATORS
Section 22 Quartz Crystal Unit Type AA-22**

1. General — Shall be read in conjunction with IS : 8271 (Part 1)-1981 'Specification for quartz crystal units used for frequency control and selection : Part 1 General requirements and tests (first revision)'.

2. Outline and Dimensions — Holder outline shall conform to Type AA [see IS : 4570 (Part 2)-1983 Specification for crystal unit holders : Part 2 Metal, solder seal, two pin crystal unit holders types AA and AB].

2. Marking — See 8 of IS : 8271 (Part 1)-1981.

3. Construction and Workmanship — See 7 of IS : 8271 (Part 1)-1981.

4. Test Schedule and Detail Requirements

4.1 General Conditions for Test — See 9.2 of IS : 8271 (Part 1)-1981.

4.2 Test Schedule — The sequence and grouping of type, routine and acceptance tests shall be according to 9.1 of IS : 8271 (Part 1)-1981.

4.3 Detail Requirements — The detail requirements applicable to this particular type of crystal unit shall be as specified in Table 1.

TABLE 1 DETAIL REQUIREMENTS OF QUARTZ CRYSTAL UNIT TYPE AA-22

| Characteristics | Requirements | |
|-------------------------------------------------------------------|---------------|-----------------|
| a) Type of holder | AA (see 1) | |
| b) Frequency range | 0.8 to 20 MHz | |
| c) Frequency tolerance: | | |
| 1) Operating temperature range | ±20 ppm | |
| 2) Room temperature | ±80 ppm | |
| d) Frequency stability | ±5 ppm | |
| e) Load capacitance | Infinity | |
| f) Mode of oscillation | Fundamental | |
| g) Reference temperature | 85±1°C | |
| h) Temperature range: | | |
| 1) Operating | 80 to 90°C | |
| 2) Operable | -55 to 80°C | |
| j) Test set, calibration values and rated drive level | See Table 2 | |
| k) Capacitance shunt | 7 pF (Max) | |
| m) Resonance resistance | See Table 3 | |
| n) Shock [According to 9.15 (severity A) of IS : 8272-1981] | Below 2 MHz | 2 MHz and above |
| 1) Frequency change permitted | ±5 ppm | ±5 ppm |
| 2) Resonance resistance change permitted | ±15 percent | ±10 percent |
| p) Vibration [According to 9.16.1 (severity A) of IS : 8271-1981] | Below 2 MHz | 2 MHz and above |
| 1) Frequency change permitted | ±5 ppm | ±5 ppm |
| 2) Resonance resistance change permitted | ±15 percent | ±10 percent |
| q) Temperature cycling: | Below 2 MHz | 2 MHz and above |
| 1) Frequency change permitted | ±5 ppm | ±5 ppm |
| 2) Resonance resistance change permitted | ±15 percent | ±10 percent |
| r) Ageing: | | |
| Frequency change permitted | 5 ppm | |

TABLE 2 TEST SET, CALIBRATION VALUES AND RATED DRIVE LEVEL

[Table 1 (j)]

| Sl. No. | Frequency Range MHz | Calibration Values | | | Rated Drive Level mW | Test Set |
|---------|------------------------|--------------------|-----------------------|-------------------------------|-------------------------|------------|
| | | Resistance ohms | Crystal Current mA | Resistor Voltage Drop volt | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| i) | From 0.8 to 1.5 | 0 | (1) | — | 5.0 ± 1.0^a | TS-330/TSM |
| ii) | Over 1.5 to 2.25 | 50 | 10 | — | 5.0 ± 1.0 | |
| iii) | Over 2.25 to 3.4 | 50 | 10 | — | 5.0 ± 1.0 | |
| iv) | Over 3.4 to 5.1 | 22 | 18 | — | 5.0 ± 1.0 | |
| v) | Over 5.1 to 7.3 | 13 | 20 | — | 5.0 ± 1.0 | |
| vi) | Over 7.5 to 10 | 13 | 20 | — | 5.0 ± 1.0 | |
| vii) | Over 10 to 15 | 11 | 15 | — | 2.5 ± 0.5 | |
| viii) | Over 15 to 20 | 10 | — | 0.16 | 2.5 ± 0.5 | S-683/TSM |

^aSet crystal current control at extreme counter-clockwise (minimum).^aThe violation of $P = I^2 R$ is intentional; at the higher resistance of the crystal unit; the empirical power dissipation will be as rated.

TABLE 3 RESONANCE RESISTANCE

[Table 1 (m)]

| Frequency Range MHz | Maximum Resistance ohms |
|------------------------|----------------------------|
| (1) | (2) |
| From 0.8 to 0.85 | 520 |
| Over 0.85 to 0.9 | 480 |
| Over 0.9 to 1 | 440 |
| Over 1 to 1.12 | 400 |
| Over 1.12 to 1.25 | 380 |
| Over 1.25 to 1.37 | 340 |
| Over 1.37 to 1.5 | 300 |
| Over 1.5 to 1.62 | 270 |
| Over 1.62 to 1.75 | 250 |
| Over 1.75 to 1.87 | 220 |
| Over 1.87 to 2 | 180 |
| Over 2 to 2.12 | 160 |
| Over 2.12 to 2.25 | 150 |
| Over 2.25 to 2.6 | 120 |
| Over 2.6 to 3 | 90 |
| Over 3 to 3.4 | 70 |
| Over 3.4 to 3.75 | 62 |
| Over 3.75 to 4 | 45 |
| Over 4 to 5 | 37 |
| Over 5 to 7 | 25 |
| Over 7 to 10 | 20 |
| Over 10 to 15 | 18 |
| Over 15 to 20 | 15 |

EXPLANATORY NOTE

This standard (Part 2/Sec 22) covers the requirements of crystal unit, quartz style QC-19 of JSS 50905 (1971) 'Detail specification for crystal unit, quartz, styles QC-10, QC-11, QC-14, QC-15, QC-16, QC-17, QC-18, and QC-19', issued by the Directorate of Standardization, Ministry of Defence (India), New Delhi.